

SEQUENCE LISTING

<110> ITOH, Kyogo et al.

<120> NOVEL TUMOR ANTIGEN PROTEIN ART-1 AND TUMOR ANTIGEN PEPTIDES THEREOF

<130> 0020-4872P

<140> US 09/857,308

<141> 2001-06-01

<150> Japan: 98-341253

<151> 1998-12-01

<160> 21

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<212> PRT

<213> Homo sapiens

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Glu Val His Asp Pro Pro Leu His Gln Pro Ser Ala Asn Lys Pro Lys  
35 40 45  
Pro Pro Thr Met Leu Asp Ile Pro Ser Glu Pro Cys Ser Leu Thr Ile  
50 55 60  
His Thr Ile Gln Leu Ile Gln His Asn Arg Arg Leu Arg Asn Leu Ile  
65 70 75 80  
Ala Thr Ala Gln Ala Gln Asn Gln Gln Gln Thr Glu Gly Val Lys Thr  
85 90 95  
Glu Glu Ser Glu Pro Leu Pro Ser Cys Pro Gly Ser Pro Pro Leu Pro  
100 105 110  
Asp Asp Leu Leu Pro Leu Asp Cys Lys Asn Pro Asn Ala Pro Phe Gln  
115 120 125  
Ile Arg His Ser Asp Pro Glu Ser Asp Phe Tyr Arg Gly Lys Gly Glu  
130 135 140  
Pro Val Thr Glu Leu Ser Trp His Ser Cys Arg Gln Leu Leu Tyr Gln  
145 150 155 160  
Ala Val Ala Thr Ile Leu Ala His Ala Gly Phe Asp Cys Ala Asn Glu  
165 170 175  
Ser Val Leu Glu Thr Leu Thr Asp Val Ala His Glu Tyr Cys Leu Lys  
180 185 190  
Phe Thr Lys Leu Leu Arg Phe Ala Val Asp Arg Glu Ala Arg Leu Gly  
195 200 205  
Gln Thr Pro Phe Pro Asp Val Met Glu Gln Val Phe His Glu Val Gly  
210 215 220  
Ile Gly Ser Val Leu Ser Leu Gln Lys Phe Trp Gln His Arg Ile Lys  
225 230 235 240  
Asp Tyr His Ser Tyr Met Leu Gln Ile Ser Lys Gln Leu Ser Glu Glu  
245 250 255  
Tyr Glu Arg Ile Val Asn Pro Glu Lys Ala Thr Glu Asp Ala Lys Pro  
260 265 270  
Val Lys Ile Lys Glu Glu Pro Val Ser Asp Ile Thr Phe Pro Val Ser

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Glu	Glu	Leu	Glu	Ala	Asp	Leu	Ala	Ser	Gly	Asp	Gln	Ser	Leu	Pro	Met
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Gly	Val	Leu	Gly	Ala	Gln	Ser	Glu	Arg	Phe	Pro	Ser	Asn	Leu	Glu	Val
305					310					315					320
Glu	Ala	Ser	Pro	Gln	Ala	Ser	Ser	Ala	Glu	Val	Asn	Ala	Ser	Pro	Leu
				325					330					335	
Trp	Asn	Leu	Ala	His	Val	Lys	Met	Glu	Pro	Gln	Glu	Ser	Glu	Glu	Gly
			340					345					350		
Asn	Val	Ser	Gly	His	Gly	Val	Leu	Gly	Ser	Asp	Val	Phe	Glu	Glu	Pro
	355						360					365			
Met	Ser	Gly	Met	Ser	Glu	Ala	Gly	Ile	Pro	Gln	Ser	Pro	Asp	Asp	Ser
370					375						380				
Asp	Ser	Ser	Tyr	Gly	Ser	His	Ser	Thr	Asp	Ser	Leu	Met	Gly	Ser	Ser
385					390					395					400
Pro	Val	Phe	Asn	Gln	Arg	Cys	Lys	Lys	Arg	Met	Arg	Lys	Ile		
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ggctgccctg	aacgtcaggc	gacctcagga	ccctgtgatt	ggcgccgtcg	ccggcggacc	180
gtgaccgagg	aaacccctgg	agggacttgg	gcattccttg	ggctccgtgc	ctgttcttcg	240
tgtccttttc	gggcaaggat	ctcacattat	cagtctttga	ccgacacaga	atgcctggca	300
tttgataaat	gtttgttgaa	cttgaagaga	catatggaca	atg aat ctg	caa aga	355
				Met Asn Leu	Gln Arg	5
tac tgg gga	gag ata cca	ata tca tca	agc cag acc	aac aga agt	tcc	403
Tyr Trp Gly	Glu Ile Pro	Ile Ser Ser	Ser Ser Ser	Gln Thr Asn	Arg Ser Ser	
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ttc gat ttg	ctc cca cgg	gag ttc cgt	ctg gtg gaa	gtc cat gac	cca	451
Phe Asp Leu	Leu Pro Arg	Glu Phe Arg	Leu Val Glu	Val His Asp	Pro	
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ccc ctg cac	caa ccc tca	gcc aac aag	ccg aag ccc	ccc act atg	ctg	499
Pro Leu His	Gln Pro Ser	Ala Asn Lys	Pro Lys Pro	Pro Thr Met	Leu	
	40		45		50	
gac atc ccc	tca gag cca	tgt agt ctc	acc atc cat	acg att cag	ttg	547
Asp Ile Pro	Ser Glu Pro	Cys Ser Leu	Thr Ile His	Thr Ile Gln	Leu	
	55		60		65	
att cag cac	aac cga cgt	ctt cgc aac	ctt att gcc	aca gct cag	gcc	595
Ile Gln His	Asn Arg Arg	Leu Arg Asn	Leu Ile Ala	Thr Ala Gln	Ala	
	70		75		80	
cag aat cag	cag cag aca	gaa ggt gta	aaa act gaa	gag agt gaa	cct	643
Gln Asn Gln	Gln Gln Thr	Glu Gly Val	Lys Thr Glu	Glu Glu Ser	Glu Pro	
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ctt ccc tcg	tgc cct ggg	tca cct cct	ctc cct gat	gac ctc ctg	cct	691
Leu Pro Ser	Cys Pro Gly	Ser Pro Pro	Leu Pro Asp	Asp Leu Leu	Pro	
	105		110		115	
tta gat tgt	aag aat ccc	aat gca cca	ttc cag atc	cgg cac agt	gac	739
Leu Asp Cys	Lys Asn Pro	Asn Ala Pro	Phe Gln Ile	Arg His Ser	Asp	
	120		125		130	
cca gag agt	gac ttt tat	cgt ggg aaa	ggg gaa cct	gtg act gaa	ctc	787

Pro	Glu	Ser	Asp	Phe	Tyr	Arg	Gly	Lys	Gly	Glu	Pro	Val	Thr	Glu	Leu	
135						140					145					
agc	tgg	cac	tcc	tgt	cgg	cag	ctc	ctc	tac	cag	gca	gtg	gcc	aca	atc	835
Ser	Trp	His	Ser	Cys	Arg	Gln	Leu	Leu	Tyr	Gln	Ala	Val	Ala	Thr	Ile	
150					155					160					165	
ctg	gcc	cac	gcg	ggc	ttt	gac	tgt	gct	aat	gag	agt	gtc	ctg	gag	acc	883
Leu	Ala	His	Ala	Gly	Phe	Asp	Cys	Ala	Asn	Glu	Ser	Val	Leu	Glu	Thr	
				170					175					180		
cta	act	gat	gtg	gca	cat	gag	tat	tgc	ctt	aag	ttt	acc	aag	ttg	ctg	931
Leu	Thr	Asp	Val	Ala	His	Glu	Tyr	Cys	Leu	Lys	Phe	Thr	Lys	Leu	Leu	
			185					190				195				
cgt	ttt	gct	gtg	gac	cgg	gag	gcc	cgg	ctg	gga	cag	act	cct	ttt	cct	979
Arg	Phe	Ala	Val	Asp	Arg	Glu	Ala	Arg	Leu	Gly	Gln	Thr	Pro	Phe	Pro	
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gat	gtg	atg	gag	cag	gta	ttc	cat	gaa	gtg	ggt	att	ggc	agt	gtg	ctc	1027
Asp	Val	Met	Glu	Gln	Val	Phe	His	Glu	Val	Gly	Ile	Gly	Ser	Val	Leu	
	215					220					225					
tcc	ctc	cag	aag	ttc	tgg	cag	cac	cgc	atc	aag	gac	tat	cac	agt	tac	1075
Ser	Leu	Gln	Lys	Phe	Trp	Gln	His	Arg	Ile	Lys	Asp	Tyr	His	Ser	Tyr	
230					235					240					245	
atg	cta	cag	att	agt	aag	caa	ctc	tct	gaa	gaa	tat	gaa	agg	att	gtc	1123
Met	Leu	Gln	Ile	Ser	Lys	Gln	Leu	Ser	Glu	Tyr	Glu	Arg	Ile	Val		
				250					255					260		
aat	cct	gag	aag	gcc	aca	gag	gac	gct	aaa	cct	gtg	aag	atc	aag	gag	1171
Asn	Pro	Glu	Lys	Ala	Thr	Glu	Asp	Ala	Lys	Pro	Val	Lys	Ile	Lys	Glu	
		265					270						275			
gaa	cct	gtg	agc	gac	atc	act	ttt	cct	gtc	agt	gag	gag	ctg	gag	gct	1219
Glu	Pro	Val	Ser	Asp	Ile	Thr	Phe	Pro	Val	Ser	Glu	Glu	Leu	Glu	Ala	
		280					285					290				
gac	ctt	gct	tct	gga	gac	cag	tca	ctg	cct	atg	gga	gtg	ctt	ggg	gct	1267
Asp	Leu	Ala	Ser	Gly	Asp	Gln	Ser	Leu	Pro	Met	Gly	Val	Leu	Gly	Ala	
	295					300					305					
cag	agc	gaa	cgc	ttc	cca	tct	aac	ctg	gag	gtt	gaa	gct	tca	cca	cag	1315
Gln	Ser	Glu	Arg	Phe	Pro	Ser	Asn	Leu	Glu	Val	Glu	Ala	Ser	Pro	Gln	
310				315						320					325	
gct	tca	agt	gca	gag	gta	aat	gct	tct	cct	ctt	tgg	aat	ctg	gcc	cat	1363
Ala	Ser	Ser	Ala	Glu	Val	Asn	Ala	Ser	Pro	Leu	Trp	Asn	Leu	Ala	His	
				330					335					340		
gtg	aaa	atg	gag	cct	caa	gaa	agt	gaa	gaa	ggc	aat	gtc	tct	ggg	cat	1411
Val	Lys	Met	Glu	Pro	Gln	Glu	Ser	Glu	Glu	Gly	Asn	Val	Ser	Gly	His	
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ggt	gtg	ctg	ggc	agt	gat	gtc	ttc	gag	gag	cct	atg	tca	ggc	atg	agt	1459
Gly	Val	Leu	Gly	Ser	Asp	Val	Phe	Glu	Glu	Pro	Met	Ser	Gly	Met	Ser	
		360					365					370				
gaa	gct	ggg	att	cct	cag	agc	cct	gat	gac	tca	gat	agc	agc	tat	ggt	1507
Glu	Ala	Gly	Ile	Pro	Gln	Ser	Pro	Asp	Asp	Ser	Asp	Ser	Ser	Tyr	Gly	
	375					380					385					
tcc	cac	tcc	act	gac	agc	ctc	atg	ggg	tcc	tcc	cct	gtt	ttc	aac	cag	1555
Ser	His	Ser	Thr	Asp	Ser	Leu	Met	Gly	Ser	Ser	Pro	Val	Phe	Asn	Gln	
390					395					400					405	
cgc	tgc	aag	aag	agg	atg	agg	aaa	ata	taaaaggaaa	agaggagat						1602
Arg	Cys	Lys	Lys	Arg	Met	Arg	Lys	Ile								
				410												
gttttgtcca	gacctactag	acccaacaga	aaagggttttt	gtattagaat	ctgttttcctt											1662
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